Correlation Between Optos Ultra Widefield Imaging and Traditional Diagnostic Methods in Glaucoma

Authors: H. Patel[1], S. Nath[2], J. Boneta[1], S. Burmy[1], D. Layliev[1], W. He[1], J. Sherman[1,2]

[1]SUNY College of Optometry, New York, NY; [2]New York Eye Institute and Laser Center, New York, NY

SUNY College of Optometry
33 West 42nd Street, New York, New York 10036

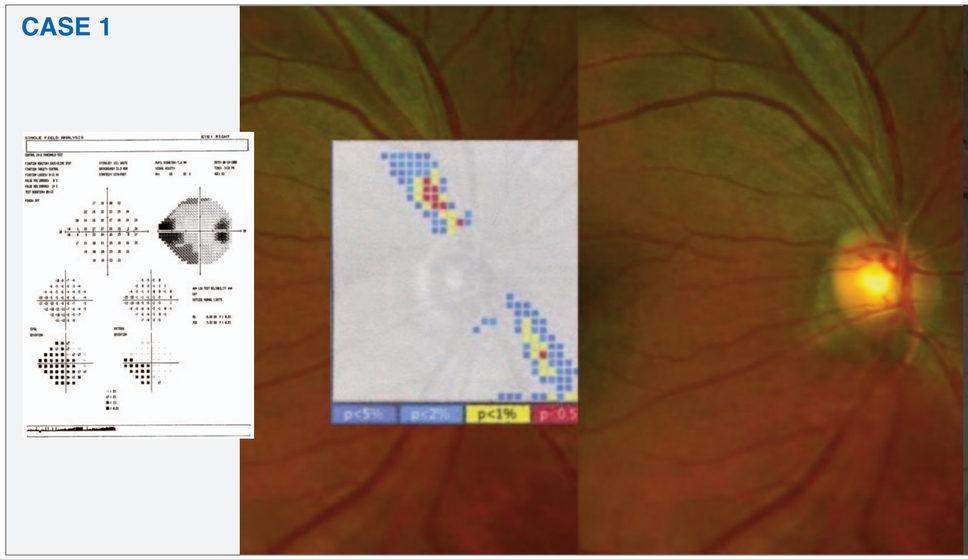
Purpose: To determine a possible correlation between retinal nerve fiber layer defects as visualized on Optos P200C ultra widefield imaging system with retinal nerve fiber layer measurements on the GDx and visual field loss.

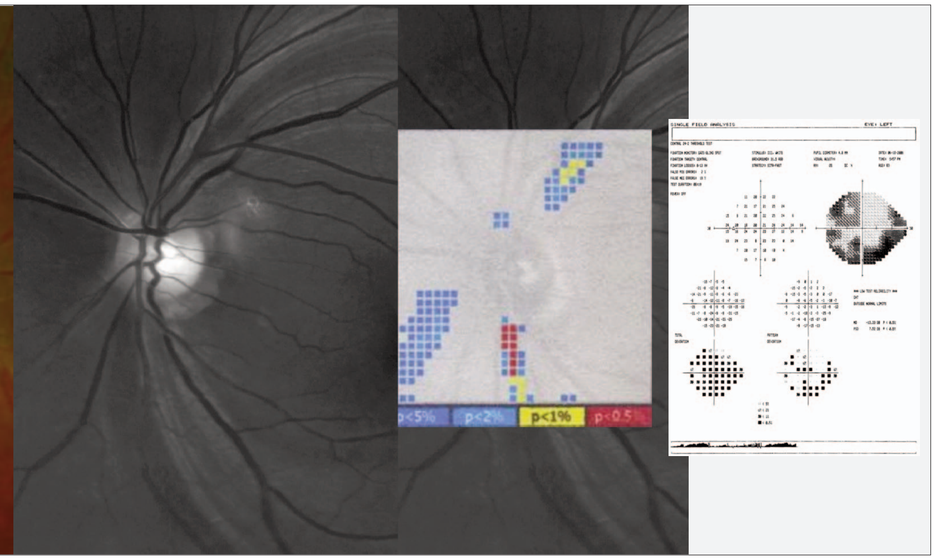
Methods: A retrospective analysis of **opto**map® images from the initial six month installation of the P200C (n=700) was performed to determine visibility of retinal nerve fiber layer loss. 36 eyes with a visible RNFL defect of at least two vein diameters and no obvious cupping were identified. Charts were then reviewed for corresponding defects as recorded with GDx and 24-2 VF. Patients with glaucomatous or pale discs as imaged with P200C were excluded.

Results: RNFL loss detected on the P200C was correlated with a defect on the GDx deviation map or corresponding VF loss in 94% of patients. **opto**map® correlated with GDx defects in 83% of eyes and with visual field loss in 69%.

Conclusions: A significant correlation was established between RNFL loss visualized on the Optos P200C imaging system and GDx. Since **opto**map® is already widely used for retinal screening, it can easily be a useful adjuvant tool in glaucoma screening. Although not specifically designed to measure RNFL loss, P200C is capable of showing subtle defects which may be indicative of early glaucoma, prior to the development of cupping. Viewing may be enhanced by using the red free image channel. When loss of the nerve fiber layer is visible on the **opto**map® it is suggested that further testing be performed. Visible RNFL loss that was not correlated with GDx may represent a loss too small to result in a GDx defect and follow up studies are underway.

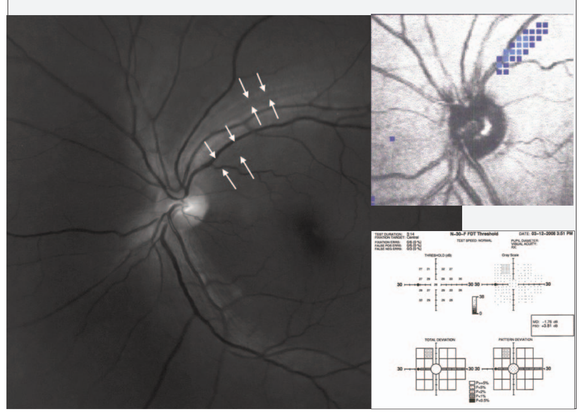
CASE 1





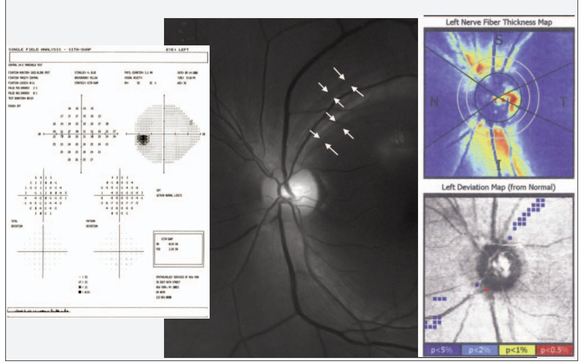
CASE 2

A 44 year-old Hispanic male with visible RNFL loss in his left eye as imaged with the P200c with a correlating GDx. FDT visual field is normal to date.

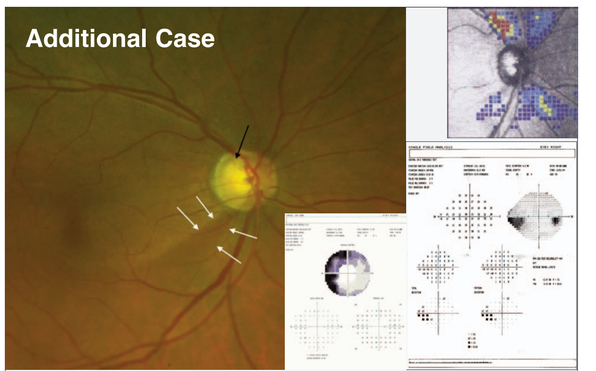


CASE 3

A 56 year-old black female with RNFL loss visible in the **opto**map® image again correlated with the GDx image. A SITA-SWAP visual field was performed and is full.



Additional Case



The above case represents a patient with obvious glaucomatous cupping; a superior notch (black arrow), superior RNFL defect on GDx and corresponding inferior nasal visual field defect (SS 24-2). However, an inferior RNFL defect (white arrows) is clearly visible on the Optos image without a thinning of the neuroretinal rim. This structural loss appears to precede functional loss on the 24-2 visual field, although can be detected by the peripheral 60-4.